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32nd National Nutrient Databank Conference

Nutrient Databases Without Borders

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Ottawa, Canada

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Relating Canada's Food Guide to Food Consumption and Nutrition Surveys



Canada 

History of Canada's Food Guide

1942

CANADA'S OFFICIAL FOOD RULES
These are the Health-Protective Foods
 Be sure you eat them every day in at least these amounts.
 (Use more if you can)

MILK—Adults— $\frac{1}{2}$ pint. Children—more than 1 pint. And some CHEESE, as available.

FRUITS—One serving of tomatoes daily, or of a citrus fruit, or of tomato or citrus fruit juices, and one serving of other fruits, fresh, canned or dried.

VEGETABLES (In addition to potatoes of which you need one serving daily)—Two servings daily of vegetables, preferably leafy green, or yellow, and frequently raw.

CEREALS AND BREAD—One serving of a whole-grain cereal and 4 to 6 slices of Canada Approved Bread, brown or white.

MEAT, FISH, etc.—One serving a day of meat, fish, or meat substitutes. Liver, heart or kidney once a week.

EGGS—At least 3 or 4 eggs weekly.
 Eat these foods first, then add these and other foods you wish.
 Some source of Vitamin D such as fish liver oils, is essential for children, and may be advisable for adults.

1944

Canada's FOOD RULES

These foods are good to eat. Eat them every day for health. Have at least three meals each day.

Milk
 Children (up to about 12 years) at least 1 $\frac{1}{2}$ pints
 Adolescents at least 1 $\frac{1}{2}$ pints
 Adults at least 1 $\frac{1}{2}$ pints

Fruit
 One serving of citrus fruit or tomatoes or their juices.
 One serving of other fruit.

Vegetables
 At least one serving of potatoes.
 At least two servings of other vegetables, preferably leafy, green or yellow and frequently raw.

Cereals and Bread
 One serving of whole grain cereal.
 At least four slices of bread (with butter or fortified margarine).

Meat and Fish
 One serving of meat, fish, poultry, or meat alternative such as dried beans, eggs and cheese.
 Use LIVER frequently.
 EGGS and CHEESE at least three times a week each.

VITAMIN D—At least 400 International Units daily for all growing persons and especially all nursing mothers.

A Pattern For Meals
 (Following Canada's Food Rules, as given on the other side)

Breakfast
 Cereals with milk
 Whole grain cereal with milk
 Bread with butter or fortified margarine
 Egg or other protein food (if desired)
 Beverage—milk for children

Dinner (at noon or at night)
 Meat, fish or poultry
 Potato
 Bread (if desired)
 Fruit or fruit dessert
 Beverage—milk for children

Supper or Lunch
 Cheese, egg or other protein food
 Vegetable
 Bread with butter or fortified margarine
 Beverage—milk

Revised 1952
 Revised 1954
 Reprinted 1955, 1957, 1959

1949

I. CANADA'S FOOD RULES
 Approved by the Canadian Council on Nutrition

THESE ARE THE FOODS FOR HEALTH. EAT THEM EVERY DAY. DRINK PLENTY OF WATER

- Milk**—Adults, $\frac{1}{2}$ to 1 pint. Children, $\frac{1}{2}$ to 1 quart.
- Fruit**—One serving of citrus fruit or tomatoes or their juices; and one serving of other fruit.
- Vegetables**—At least one serving of potatoes; at least two servings of other vegetables, preferably leafy, green or yellow, and frequently raw.
- Cereals and Bread**—One serving of a whole-grain cereal and at least four slices of Canada Approved Vitamin B bread (whole wheat, brown or white) with butter.
- Meat and Fish**—One serving of meat, fish, poultry or meat alternatives such as beans, peas, nuts, eggs or cheese. Also use eggs and cheese at least three times a week each, and liver frequently.

A fish liver oil, as a source of vitamin D, should be given to children and expectant women, and may be advisable for other adults.

Iodized salt is recommended.

1961

CANADA'S FOOD GUIDE
 THESE FOODS ARE GOOD TO EAT. EAT THEM EVERY DAY FOR HEALTH. HAVE THREE MEALS EACH DAY.

MILK
 Children (up to about 12 years) 2 $\frac{1}{2}$ cups (20 fl. oz.)
 Adolescents 4 cups (32 fl. oz.)
 Adults 1 $\frac{1}{2}$ cups (12 fl. oz.)
 Expectant and nursing mothers 4 cups (32 fl. oz.)

FRUIT
 Two servings of fruit or juice including a satisfactory source of vitamin C (ascorbic acid) such as oranges, tomatoes, vitaminized apple juice.

VEGETABLES
 One serving of potatoes.
 Two servings of other vegetables, preferably yellow or green and often raw.

BREAD AND CEREALS
 Bread (with butter or fortified margarine).
 One serving of whole grain cereal.

MEAT AND FISH
 One serving of meat, fish or poultry. Eat liver occasionally.
 Eggs, cheese, dried beans or peas, may be used in place of meat.
 In addition, eggs and cheese each at least three times a week.

Produced by the Department of National Health and Welfare, Canada, by authority of the Minister, the Honorable John J. Stuckey, C.M.P.

1977

Canada's Food Guide

Eat a variety of foods from each group every day

milk and milk products
 2 servings
 Children up to 12 years: 2 $\frac{1}{2}$ cups (20 fl. oz.)
 Adolescents: 4 cups (32 fl. oz.)
 Adults: 1 $\frac{1}{2}$ cups (12 fl. oz.)
 Expectant and nursing mothers: 4 cups (32 fl. oz.)

meat and alternates
 2 servings
 One serving of meat, fish, poultry, or meat alternative such as dried beans, peas, nuts, eggs or cheese.
 Use liver occasionally.
 Eggs, cheese, dried beans or peas, may be used in place of meat.
 In addition, eggs and cheese each at least three times a week.

bread and cereals
 3-5 servings
 Bread (with butter or fortified margarine).
 One serving of whole grain cereal.

fruits and vegetables
 4-5 servings
 One serving of potatoes.
 Two servings of other vegetables, preferably yellow or green and often raw.

1982

Canada's Food Guide

Eat a variety of foods from each group every day

milk and milk products
 2 servings
 Children up to 12 years: 2 $\frac{1}{2}$ cups (20 fl. oz.)
 Adolescents: 4 cups (32 fl. oz.)
 Adults: 1 $\frac{1}{2}$ cups (12 fl. oz.)
 Expectant and nursing mothers: 4 cups (32 fl. oz.)

meat, fish, poultry and alternates
 2 servings
 One serving of meat, fish, poultry, or meat alternative such as dried beans, peas, nuts, eggs or cheese.
 Use liver occasionally.
 Eggs, cheese, dried beans or peas, may be used in place of meat.
 In addition, eggs and cheese each at least three times a week.

bread and cereals
 3-5 servings
 Bread (with butter or fortified margarine).
 One serving of whole grain cereal.

fruits and vegetables
 4-5 servings
 One serving of potatoes.
 Two servings of other vegetables, preferably yellow or green and often raw.

Variety
 Choose different kinds of foods from within each group to approximate number of servings and nutrients.

Energy Balance
 Health varies with age, sex and activity. Balance energy intake from foods with energy needs. Avoid excess eating to control weight. Health Canada's Food Guide is based on a 2000 kcal diet.

Moderation
 Select and prepare foods with limited amounts of fat, sugar and salt. If alcohol is consumed, use food responsibly.

Canada's Food Guide for Healthy Eating (CFGHE) - 1992

CANADA'S Food Guide TO HEALTHY EATING FOR PEOPLE FOUR YEARS AND OVER

Enjoy a variety of foods from each group every day.
Choose lower-fat foods more often.

Grain Products	Vegetables and Fruit	Milk Products	Meat and Alternatives
5-12 SERVINGS PER DAY	5-10 SERVINGS PER DAY	2-3 SERVINGS PER DAY <i>Children 4-9 years: 2-3 Adults 10-19 years: 3-4 Pregnant and Breast-feeding Women: 3-4</i>	2-3 SERVINGS PER DAY
1 Slice 175 mL 3/4 cup 30 g	1 Medium Size Vegetable or Fruit 125 mL 1/2 cup	250 mL 1 cup 3 x 1 x 1 30 g	10-100 g 1-2 Eggs 1/3-2/3 Can 30-100 g
Hot Cereal 175 mL 3/4 cup Cold Cereal 30 g 1 Slice 1 Bagel, Pita or Bun 200 mL 1 cup	Fresh, Frozen or Canned Vegetables or Fruit 125 mL 1/2 cup Seed 250 mL 1 full Juice 125 mL 1/2 cup	1 Serving 250 mL 1 cup 3 x 1 x 1 30 g 2 Slices 30 g 175 g 3/4 cup	1 Serving 100 g 1/3-2/3 Can 30-100 g 1-2 Eggs 125-250 mL 1/3 cup 100 g 1/3 cup Peanut Butter 30 mL, 2 tbsp

Other Foods
Taste and enjoyment can also come from other foods and beverages that are not part of the 4 food groups. Some of these foods are higher in fat or calories, so use these foods in moderation.

Different People Need Different Amounts of Food
The amount of food you need every day from the 4 food groups and other foods depends on your age, body size, activity level, whether you are male or female and if you are pregnant or breast-feeding. That's why the Food Guide gives a lower and higher number of servings for each food group. For example, young children can choose the lower number of servings, while male teenagers can go to the higher number. Most other people can choose servings somewhere in between.

Consult Canada's Physical Activity Guide to Healthy Active Living to help you build physical activity into your daily life.

Enjoy eating well, being active and feeling good about yourself. That's **VITALITY**

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CFGHE Directional Statements

- Choose whole grain and enriched products more often;
- Choose dark green and orange vegetables and orange fruit more often;
- Choose lower-fat milk products more often;
- Choose leaner meats, poultry and fish, as well as dried peas, beans and lentils more often;
- Choose lower fat foods more often.



Relating Canada's Food Guide to Healthy Eating to CNF Foods

The screenshot shows the Health Canada website interface. At the top, there is a navigation bar with the Canadian flag and the text 'Health Canada / Santé Canada'. Below this is a menu with options: Français, Contact us, Help, Search, Canada Site, A-Z Index, Consultations, Media Room, It's Your Health, and Home. The main content area is titled 'Food & Nutrition' and includes a breadcrumb trail: 'Home > Food and Nutrition > Nutrition & Healthy Eating > Nutrient Data'. The main heading is 'Canadian Nutrient File, 2007b'. There is a 'Notice' box stating that the 2007 version of the CNF had errors corrected in March 2007, and the version after May 2007 is referred to as the 2007b CNF. Below the notice, there is a link to the '32nd National Nutrient Databank Conference' and a section for 'Search the Food Composition Database' with links to 'Search online for foods in the Canadian Nutrient File, version 2007b' and 'Download files'. The page also features a sidebar with various health-related links and a footer with 'Canadian Nutrient File Recipe Proportions'.

- Canadian Nutrient File (CNF) is Canada's standard food composition database;
- 2007b version has data on 5516 food items with up to 143 food components;
- User-friendly online search feature is available.

www.healthcanada.gc.ca/cnf



Goals of Relating CFGHE to the CNF foods

1. Assist health professionals to **apply the principles of the Food Guide in a standardized fashion** and expand the opportunity to collect rudimentary nutrient intake data by tying the subgroups back to the nutrient database.
2. Provision of **portion sizes and food grouping** information for a **wider variety of foods** than previously available.
3. **Standardize the reporting of data** within food groups particularly for **nutrition assessment and monitoring** purposes, across the country.
4. Desire to computerize the **breakdown of diets into Food Guide servings**.



Food groups and sub-groups

Grain Products

Whole grain, enriched
Whole grain, non enriched
Non-whole grain, enriched
Non whole grain, non enriched

Vegetables and Fruits

Fruits, deep yellow, orange
Fruits, other
Fruits, juice
Fruits, nectar
Vegetables, dark green leafy
Vegetables, deep yellow or orange
Vegetables, potatoes
Vegetables, other

Milk Products

Milk & Fortified Plant
Based Beverages
Other

Meat and Alternatives

Beef, Game and Organ
meats
Other Meats
Poultry
Fish and Shellfish
Legumes
Nuts and Seeds
Eggs
Processed Meats

Other Foods

Mostly fat
Mostly sugar
High salt and/or high fat snack
foods
Beverages
Higher calorie
Lower calorie
Herbs, Spices and Condiments
Alcohol
Miscellaneous
High sugar and/or high fat

Meal Replacements & Supplements

Meal Replacements
Supplements



Thresholds for higher fat subgroups

Milk Products: $\geq 40\%$ kcal from fat

Vegetables and Fruits: $\geq 20\%$ kcal from fat

Grain Products:

- **grains and cereals** $\geq 15\%$ kcal from fat \Rightarrow higher fat grain
- **baked products** $\geq 25\%$ kcal from fat \Rightarrow higher fat grain
 $\geq 50\%$ kcal from fat \Rightarrow High fat Other food

Meat and Alternatives: $\geq 40\%$ kcal from fat

For all foods: $\geq 90\%$ kcal from fat \Rightarrow Mostly fat Other food

Example

100g of ready to eat granola cereal = 20g fat and 466 kcal with 38% kcal coming from fat. This cereal is a higher fat choice



Serving sizes - Milk Products

Milk Products: The only case where a firm threshold could be used to calculate the serving size was in the dairy group. 1 serving corresponds to the amount of calcium in 250mL of milk (300mg).

Challenge: certain dairy foods are not very high in calcium. Should they be considered dairy?

Example: cottage cheese contains low amounts of calcium. The reasonable serving size (125mL) contains 80mg of calcium, somewhat lower than the 300mg threshold developed. 125mL would then correspond to $\frac{1}{4}$ serving.



Serving sizes – Vegetables & Fruit and Grain Products

Vegetables and Fruit: If the fruit was usually consumed as a whole fruit then the size for one serving should be medium and if the fruit would normally be consumed in pieces then one should use the 125mL as one serving size.

Example: 1 medium apple, 125mL cubed melon

Grain Products: The only acceptable objective threshold was that providing >20g grain per serving.

Example: 1 medium pancake, 125mL macaroni pasta, 10 crackers



Serving sizes – Meat and Alternatives

Meat and Alternatives: One serving is between 50-100g and the FG recommends a total of 2-3 servings per day.

Alternate:	Serving size for 50g meat equivalent
Egg:	1 large egg
Most Legumes:	125mL
Peanut butter:	30mL
Nuts and Seeds:	60mL

Other Foods:

“Some of these foods are very high in fat or Calories, so use these foods in moderation” is mentioned in the Food Guide. No subgroup nor serving size has been assigned in the CNF for these foods as only moderation is the keyword.



Overview of CCHS Cycles

Cycle 1.1 (2000-2001)

- General health
- 130,000 participants
- 12 years and older

Cycle 1.2 (2002)

- Mental health
- 30,000 participants
- 15 years and older

Cycle 2.1 (2003)

- General health
- 130,000 participants
- 12 years and older

Cycle 2.2 (2004)

- Nutrition
- 30,000 participants
- 0 and older

Cycle 3.1 (2005)

- General health
- 130,000 participants
- 12 years and older

CHMS (2006-2008)

- Health Measures
- 5,000 participants
- 6 to 79 years of age

Cycle 4.1 (2007-2008)

- General health
- 65,000 participants /year
- Over 2 years
- 12 years and older

Cycle 4.2 (2009)

- Healthy Aging
- 30,000 participants
- 50 years and older



CCHS 2.2 Overview

All ages included;

Final sample size: slightly over 35,000;

Population exclusions:

- 3 territories;
- individuals living on Aboriginal Reserves and Crown Lands;
- residents of institutions;
- full-time members of the Canadian Forces;
- residents of some remote areas;

Response rate: 76.5%

General Health

Physical Activity

Sedentary Activity

Height and Weight

24-hour Dietary Recall

Vitamin and Mineral Supplements

Household Food Security

Fruit and Vegetable Consumption

Women's Health

Chronic Conditions

Smoking

Alcohol Consumption

Socio-Demographics

Labour Force

Income



Average daily servings from the 4 food groups, household population aged 4 or older, Canada excluding territories, 2004

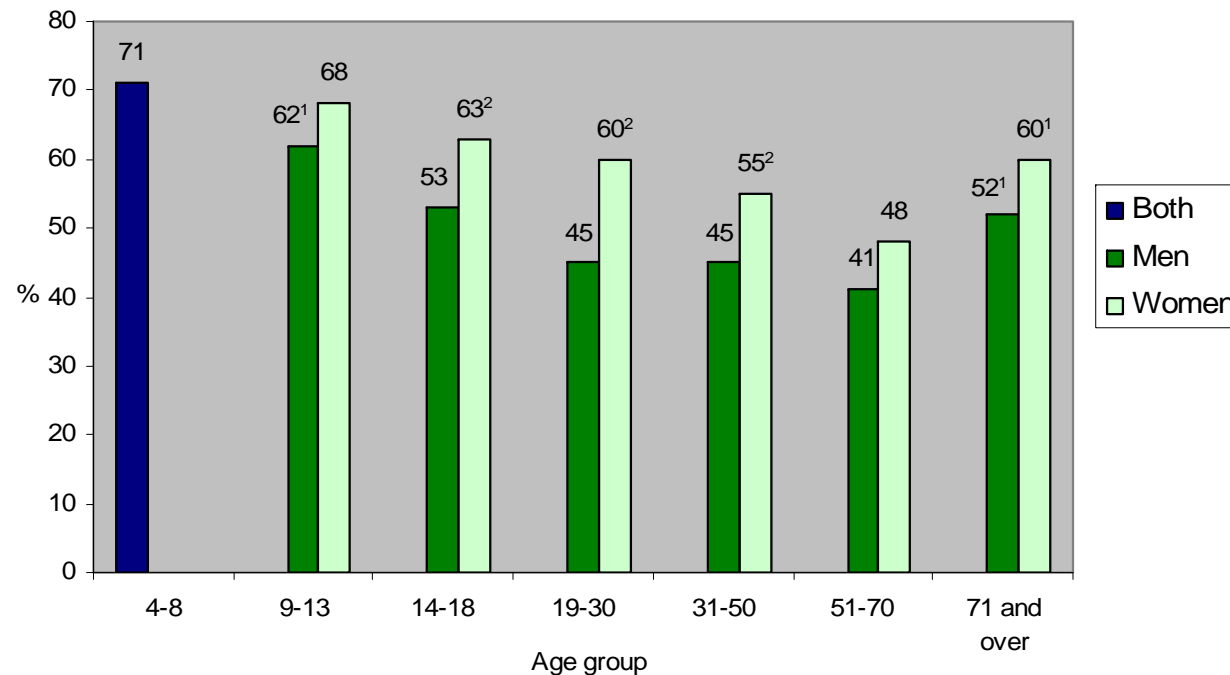
Age-sex groups		Vegetables and Fruit servings	Milk products servings	Meat and alternatives (g)	Grain products servings
4-8	both	4.18	2.31	118	5.76
9-13	male	4.53	2.55*	176	7.09
	female	4.40	2.08*	130	5.92
14-18	male	4.87	2.64*	229	7.98
	female	4.45	1.82*	136	5.74
19-30	male	5.36	1.95	247	7.32
	female	4.67	1.64	145	5.19
31-50	male	5.26	1.62	254	6.64
	female	4.92	1.52	169	4.87
51-70	male	5.68	1.37	241	5.74
	female	5.24	1.28	174	4.66
71 and over	male	5.03	1.36	189	5.59
	female	4.76	1.24	140	4.47

* Recommendation for Milk Products: children 4-9 is 2 to 3 servings/day, for youth 10-16 years is 3 to 4 servings/day, and adults is 2 to 4 servings/day.

Data source: 2004 Canadian Community Health Survey: Nutrition



Percentage below recommended minimum number of servings of vegetables and fruit, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)

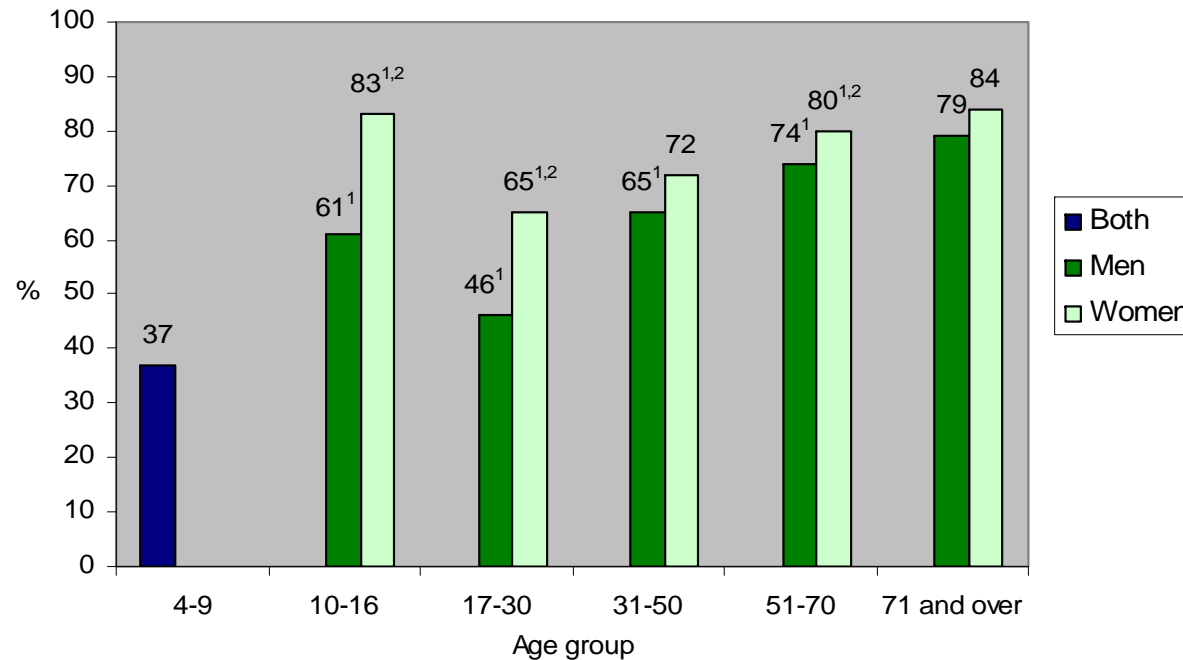
2. Significantly different from estimate for males in same age group ($p < 0.05$)

Notes: Based on usual consumption. Canada's Food Guide to Healthy Eating for People Four Years Old and Over recommends a minimum of five servings a day. Excludes women who were pregnant or breastfeeding.

Data source: 2004 Canadian Community Health Survey: Nutrition



Percentage below recommended minimum number of servings of milk products, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)

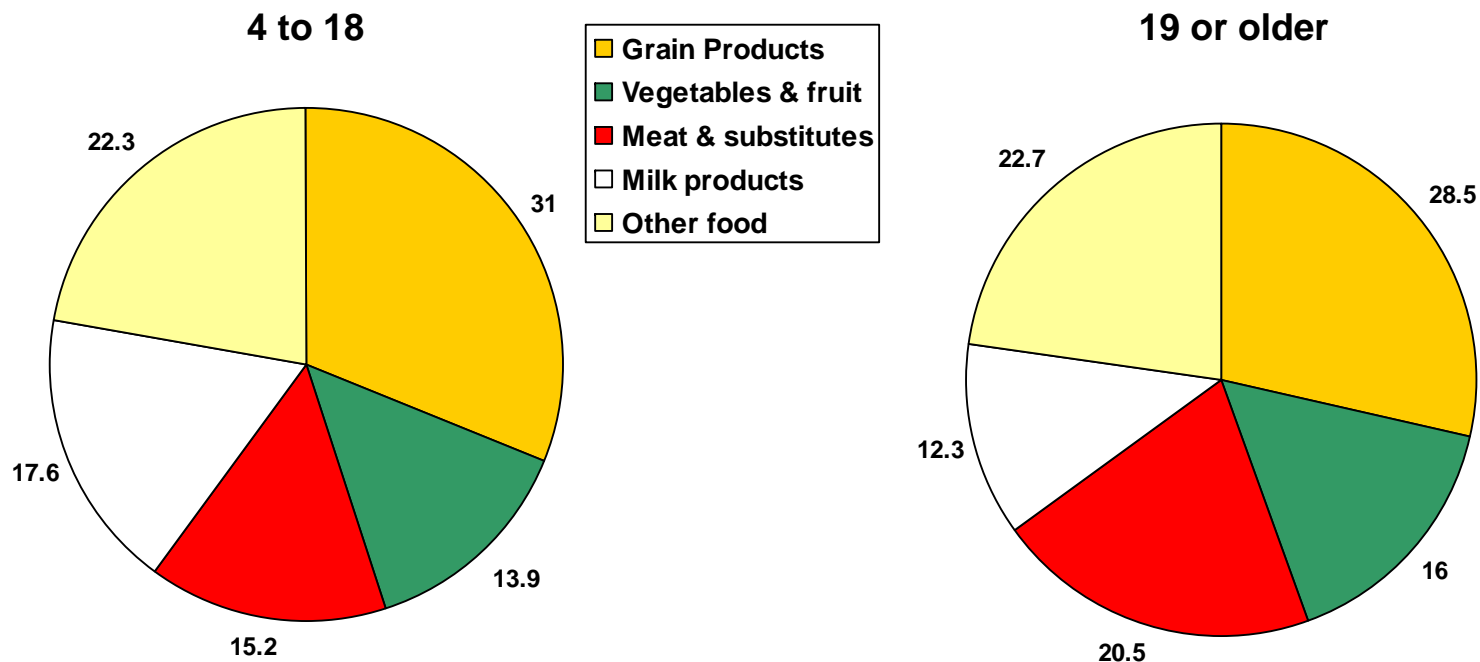
2. Significantly different from estimate for males in same age group ($p < 0.05$)

Notes: Based on usual consumption. Age groups are based on Canada's Food Guide to Healthy Eating for People Four Years Old and Over, which recommends a minimum of two servings a day for children aged 4 to 9 and adults aged 17 or older, and three servings a day for 10- to 16-year-olds. Excludes women who were pregnant or breastfeeding.

Data source: 2004 Canadian Community Health Survey: Nutrition



Percentage distribution of sources of calories, by food group and age group, household population aged 4 or older, Canada excluding territories, 2004

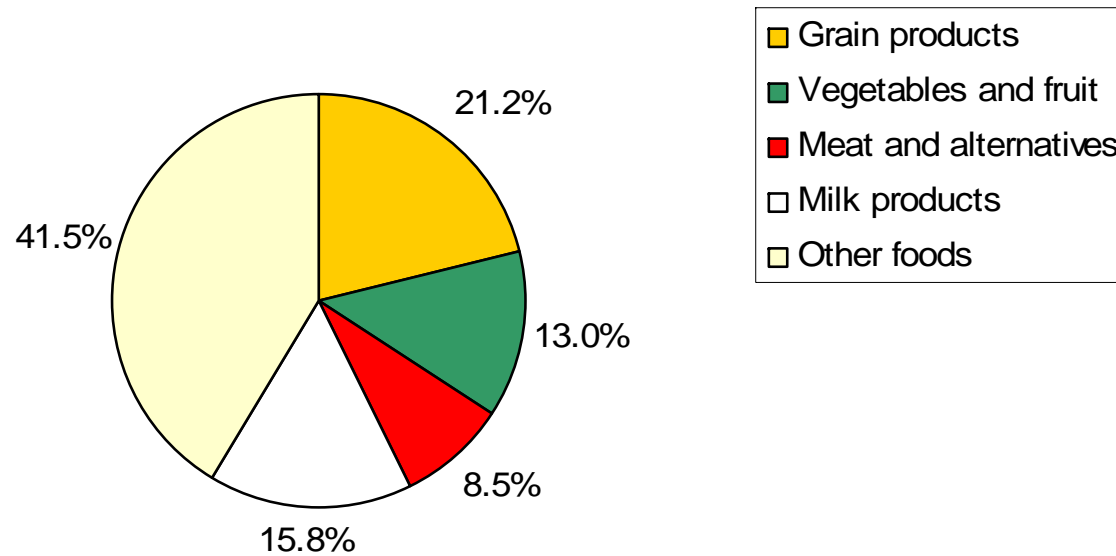


Note: Excludes women who were pregnant or breastfeeding

Data Source: 2004 Canadian Community Health Survey: Nutrition



Percentage distribution of calories from between-meal consumption, by food group, household population aged 4 or older, Canada excluding territories, 2004

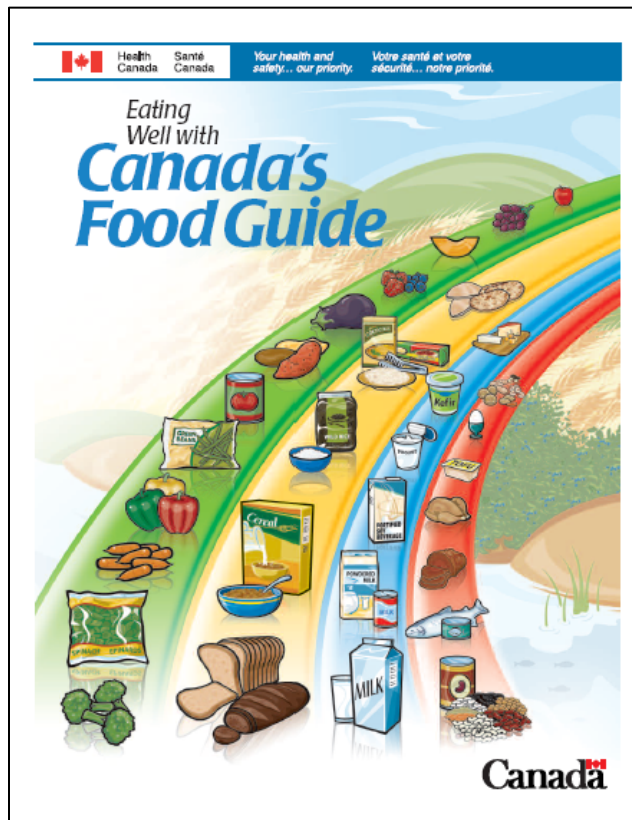


Note: Excludes women who were pregnant or breastfeeding

Data Source: 2004 Canadian Community Health Survey: Nutrition



Eating Well with Canada's Food Guide (2007)



Recommended Number of Food Guide Servings per Day

Age in Years Sex	Children			Teens		Adults			
	2-3	4-8	9-13	14-18		19-50		51+	
	Girls and Boys			Females	Males	Females	Males	Females	Males
Vegetables and Fruit	4	5	6	7	8	7-8	8-10	7	7
Grain Products	3	4	6	6	7	6-7	8	6	7
Milk and Alternatives	2	2	3-4	3-4	3-4	2	2	3	3
Meat and Alternatives	1	1	1-2	2	3	2	3	2	3

The chart above shows how many Food Guide Servings you need from each of the four food groups every day.

Having the amount and type of food recommended and following the tips in *Canada's Food Guide* will help:

- Meet your needs for vitamins, minerals and other nutrients.
- Reduce your risk of obesity, type 2 diabetes, heart disease, certain types of cancer and osteoporosis.
- Contribute to your overall health and vitality.



Choosing Foods

Vegetables and Fruit:

- Eat at least one dark green and one orange vegetable each day.
- Choose vegetables and fruit prepared with little or no added fat, sugar or salt.
- Have vegetables and fruit more often than juice.

Grain Products:

- Make at least half of your grain products whole grain each day.
- Choose grain products that are low in fat, sugar or salt.



Choosing Foods

Milk and Alternatives:

- Drink skim, 1% or 2% milk each day.
- Select lower fat milk alternatives.

Meat and Alternatives:

- Have meat alternatives such as beans, lentils and tofu often.
- Eat at least two Food Guide Servings of fish each week.
- Select lean meat and alternatives prepared with little or no added fat or salt.



Choosing Foods

Oils and Fats:

- Include a small amount - 2 to 3 tablespoons (30 to 45mL) - of unsaturated fats each day.
- Use vegetable oils such as canola, olive and soybean.
- Choose soft margarines that are low in saturated and trans fats.
- Limit butter, hard margarines, lard and shortening.

Satisfy your thirst with water!

- Drink water regularly. It's a calorie-free way to quench your thirst. Drink more water in hot weather or when you are very active.



Choosing Foods

- **Advice for different ages and stages.**
 - Children
 - Women of childbearing age
 - Men and women over 50
- **How do I count Food Guide Servings in a meal?**
- **Eat well and be active today and every day!**



Thank you!

- Bureau of Nutritional Sciences, Food Directorate, Health Products and Food Branch, Health Canada
- Bureau of Biostatistics and Computer Applications, Food Directorate, Health Products and Food Branch, Health Canada
- Office of Nutrition Policy and Promotion, Health Products and Food Branch, Health Canada

